



*Picture Perfect Security, Frame After Frame.*

Mitsubishi Digital Electronics America, Inc.  
Imaging Products Division  
9351 Jeronimo Road  
Irvine, CA 92618

3-Part Specification for

**DX-TL4516U**  
Digital Video Recorder

Phone: (888) 307-0388  
Fax: (949) 465-6338

[ipdinfo@mdea.com](mailto:ipdinfo@mdea.com)  
[www.mitsubishi-imaging.com](http://www.mitsubishi-imaging.com)

#### GENERAL NOTES TO SPECIFIER:

THIS SPECIFICATION SECTION HAS BEEN PREPARED TO ASSIST DESIGN PROFESSIONALS IN THE PREPARATION OF PROJECT OR OFFICE MASTER SPECIFICATIONS. IT FOLLOWS GUIDELINES ESTABLISHED BY THE CONSTRUCTION SPECIFICATIONS INSTITUTE, AND THEREFORE MAY BE USED WITH MOST MASTER SPECIFICATION SYSTEMS WITH MINOR EDITING.

EDIT CAREFULLY TO SUIT PROJECT REQUIREMENTS. MODIFY AS NECESSARY AND DELETE ITEMS THAT ARE NOT APPLICABLE. VERIFY THAT REFERENCED SECTION NUMBERS AND TITLES ARE CORRECT. (NUMBERS AND TITLES REFERENCED ARE BASED ON *MASTERFORMAT*, 2004 EDITION).

THIS SECTION ASSUMES THE PROJECT MANUAL WILL CONTAIN COMPLETE DIVISION 1 DOCUMENTS INCLUDING SECTIONS 01 25 13–PRODUCT SUBSTITUTION PROCEDURES, 01 33 00–SUBMITTAL PROCEDURES, 01 62 00–PRODUCT OPTIONS, 01 66 00–PRODUCT STORAGE AND HANDLING REQUIREMENTS, 01 74 00–CLEANING AND WASTE MANAGEMENT, 01 77 00–CLOSEOUT PROCEDURES, AND 01 78 00–CLOSEOUT SUBMITTALS. CLOSE COORDINATION WITH DIVISION 1 SECTIONS IS REQUIRED. IF THE PROJECT MANUAL DOES NOT CONTAIN THESE SECTIONS, ADDITIONAL INFORMATION SHOULD BE INCLUDED UNDER THE APPROPRIATE ARTICLES.

CLOSE COORDINATION IS ALSO REQUIRED BETWEEN THIS SECTION AND THE OVERALL VIDEO SURVEILLANCE SYSTEM SECTION.

THIS IS AN OPEN PROPRIETARY SPECIFICATION ALLOWING USERS THE OPTION OF APPROVING OTHER MANUFACTURERS THAT COMPLY WITH THE CRITERIA SPECIFIED HEREIN.

NOTES TO THE SPECIFIER ARE CONTAINED IN BOXES AND SHOULD BE DELETED FROM FINAL COPY.

OPTIONAL ITEMS REQUIRING SELECTION BY THE SPECIFIER ARE ENCLOSED WITHIN BRACKETS, E.G. [35] [40] [45]. MAKE APPROPRIATE SELECTIONS AND DELETE OTHERS.

ITEMS REQUIRING ADDITIONAL INFORMATION ARE UNDERLINED BLANK SPACES, E.G. \_\_\_\_\_.

OPTIONAL PARAGRAPHS REQUIRING SELECTION OF ONE OF THE OPTIONS ARE SEPARATED BY "OR" WITHIN A BOX, E.G.

OR

**BOLD FACE TYPE** IDENTIFIES OPTIONAL PARAGRAPHS AND FEATURES THAT MAY BE INCLUDED OR DELETED DEPENDING ON PROJECT REQUIREMENTS. CONVERT THE BOLD FACE TYPE TO REGULAR TYPE WHEN INCLUDING THESE PARAGRAPHS OR FEATURES. WHEN DELETING A PARAGRAPH, BE CERTAIN THAT ALL SUBPARAGRAPHS ARE ALSO DELETED.

REVISE FOOTER TO SUIT PROJECT/OFFICE REQUIREMENTS.

ELECTRONIC VERSIONS OF THIS SPECIFICATION UTILIZE AUTOMATIC PARAGRAPH NUMBERING.

WHEN EDITING IS COMPLETE, DELETE ALL TEXT ON THIS PAGE, THEN REMOVE THE SECTION BREAK AT THE TOP OF THE NEXT PAGE TO REMOVE THIS PAGE FROM THE DOCUMENT.

**SPECIFICATION BEGINS ON THE FOLLOWING PAGE.**

## SECTION 28 23 19

### DIGITAL VIDEO RECORDER

#### PART 1 - GENERAL

##### 1.01 SUMMARY

A. Section Includes: 16 Channel digital video recorder (DVR) and accessories for Project video surveillance system.

VERIFY THAT VIDEO SURVEILLANCE SYSTEM SECTION DOES NOT INCLUDE A DVR AND REFERS TO THIS SECTION FOR SUPPLY OF THE DVR.

B. Products Supplied But Not Installed Under This Section: Digital video recorder and accessories.

C. Related Sections:

INSERT SECTION NUMBER AND TITLE BELOW USED TO SPECIFY THE BASIC VIDEO SURVEILLANCE SYSTEM AND OTHER RELATED SECTIONS AS DESIRED.

1. \_\_\_\_\_ - \_\_\_\_\_.
2. \_\_\_\_\_ - \_\_\_\_\_.
3. \_\_\_\_\_ - \_\_\_\_\_.

INCLUDE APPROPRIATE LANGUAGE BELOW IF PRODUCTS SPECIFIED IN THIS SECTION ARE TO BE BID AS ALTERNATES. OTHERWISE DELETE FOLLOWING PARAGRAPH.

D. Alternates:

1. Reference Section 01 23 00—Alternates.

##### 1.02 SUBMITTALS

A. Reference Section 01 33 00—Submittal Procedures; submit following items:

1. Product Data for DVR and accessories.
2. Details of express replacement program.
3. Owner's Manual including Owner's Manual(s) for specified accessories.
4. Quality Assurance/Control Submittals:
  - a. Qualifications: Proof of manufacturer's qualifications.
  - b. Manufacturer's Installation Instructions—if not included in Owner's Manual.

INSERT SECTION NUMBER AND TITLE BELOW USED TO SPECIFY THE BASIC VIDEO SURVEILLANCE SYSTEM.

B. Closeout Submittals: Reference Section 01 78 00—Closeout Submittals and Section \_\_\_\_\_; submit following items:

1. Operating and Maintenance Instructions: Owner's Manual including Owner's Manual(s) for accessories.
2. Special Warranties.

##### 1.03 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer Qualifications:
    - a. Minimum five years experience in producing digital video recorders.
    - b. ISO 9000 Certification.
- B. Regulatory Requirements: DVR shall comply with the following:
  - 1. FCC Part 15, Class A.
  - 2. **Industry Canada ICES 003.**
- C. Certifications: UL and cUL.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Reference Section 01 66 00–Product Storage and Handling Requirements.
- B. Follow instructions in manufacturer's Owner's Manual.

#### 1.05 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Maintain the following conditions for 24 hours prior to installation and continuously following installation:
  - 1. Temperature: 40 to 105 degrees F (5 to 40 degrees C).
  - 2. Humidity: 30 to 80 percent.

#### 1.06 WARRANTY

- A. Special Warranty: 60 months against manufacturing defects.
- B. Provide an express replacement program for defective DVRs subject to the following conditions:
  - 1. Original warranty period shall be in effect and warranty period must be verifiable.
  - 2. Upon verification of warranty coverage and proof of defect by manufacturer's Technical Support Center, manufacturer shall ship a replacement unit within 24 hours via overnight delivery.

#### 1.07 SYSTEM STARTUP

INSERT SECTION NUMBER AND TITLE BELOW, AND IN THE FOLLOWING TWO ARTICLES, (OWNER'S INSTRUCTIONS AND COMMISSIONING) USED TO SPECIFY THE BASIC VIDEO SURVEILLANCE SYSTEM.

- A. Refer to Section \_\_\_\_\_.

#### 1.08 OWNER'S INSTRUCTIONS

- A. Refer to Section \_\_\_\_\_.
- B. Provide DVR training program on CD.

#### 1.09 COMMISSIONING

- A. Refer to Section \_\_\_\_\_.

#### 1.10 MAINTENANCE

**A. Extra Components: Provide one spare DVR for Owner's emergency use. Spare DVR shall be same model as specified herein.**

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Mitsubishi Digital Electronics America, Inc.  
Imaging Products Division  
9351 Jeronimo Road  
Irvine, CA 92618

Tel: (888) 307 0388  
Fax: (949) 465-6338  
E-mail: [ipdinfo@mdea.com](mailto:ipdinfo@mdea.com)  
Website: [www.mitsubishi-imaging.com/](http://www.mitsubishi-imaging.com/)

INSERT NAME, ADDRESS AND PHONE NUMBERS OF MANUFACTURER'S REPRESENTATIVE BELOW.

1. Manufacturer's Representative:

SELECT MODEL BASED ON SYSTEM REQUIREMENTS FOR HARD DRIVE DISK SPACE (250GB, 500GB, 1TB).

B. Model: [DX-TL4516U-250GB] [DX-TL4516U-500GB] [DX-TL4516U-1TB]

C. Substitutions: Reference Section 01 25 13—Product Substitution Procedures.

2.02 COMPONENTS

A. Digital Video Recorder:

1. General Description: 16-camera video multiplexer recorder using JPEG2000 compression and supporting 13 recording rates and 6 recording quality grades. DVR shall display in live mode 60 PPS per channel and display up to 960 on a 16 display pattern. DVR shall record up to 120 PPS with independent settings per channel.
  - a. Unit shall be fully multitasking, supporting Triplex operations able to display live video, record, and playback of specific cameras in a multiple display pattern on a single monitor screen. DVR shall also support archiving or copying at the same time.
  - b. Unit shall have a built in DVD/CD R/W +/-.
  - c. Unit shall support the addition of up to 14 external USB HDDs where each drive can be up to 2TB each. Support for USB jump drives is also available.
  - d. Unit shall feature time base correction, eliminating the need for external camera synchronization.
  - e. Unit shall support 10BASE-T/100BASE-T interface and will support LAN and WAN via web browser and network software.
  - f. Include setup wizard to simplify setup and programming.
  - g. Auto-detect all color or monochrome cameras connected.
  - h. 16 composite BNC inputs and 16 BNC lopping outputs with built in auto termination.
  - i. DVR shall automatically adjust for daylight savings time (DST).
2. Operations:
  - a. Local control is via GUI from front panel buttons, mouse, keyboard, or wired remote.
  - b. Remote operations is via network software with some limit via web browser.
  - c. DVR Menu System Language: Selectable to English, Spanish, or French.
  - d. Control of up to 16 PTZ cameras.
3. Screen Modes:

- a. Support programmable dual monitor outputs, a primary and secondary, or spot monitor.
- b. Primary monitor (S-Video, Composite) output shall provide access to menu screens, playback and live full screen, sequential full screen, quad, 9, 10, 13, or 16 multi screen displays.
- c. Secondary monitor output (composite video only) shall provide support of live and playback full screen, sequential full screen, quad, 9, 10, 13 or 16 multi screen displays. Menu display is not available for this output.
- d. Digital zoom 2X and 4X power. Zoom shall be available for live or playback, local or via network. Zoomed area shall be selectable, being able to move around the viewing area.
- e. Support digital freeze image and image by image forward and reverse advancement.
- f. Capability of displaying user definable cameras in single, quad, 9, 10, 13, or 16 display modes.

4. Recording and Playback:

- a. Support Triplex operations, supporting live, record, and playback in a multiple display pattern on one screen at the same time.
- b. Record any and all camera inputs as full screen images.
- c. Record up to 30 pictures per second (PPS) for one camera and up to 120 images total PPS at a resolution of 720 by 240.
- d. Provide per camera, variable record rates and variable record quality allowing user to program each camera independently.
- e. Provide user programmable up to 16-character title for each camera and shall provide ability to record time, date, and title with each image.
- f. Search by time and date, alarm number, bookmark, and motion search.
- g. Capability to playback, pause, reverse play, forward play, and image by image advance and four forward or reverse speed search. The DVR review speed shall also have the ability to be set by user.
- h. Capability to support an alarm log (when Alarms are recorded as Alarm), displaying every event recorded on disk.
- i. Capability to support an alarm log that shall be searchable by time and date, camera type, index, and provide a quick search function playing back 5 seconds of the recorded information.(when Alarms are recorded as Alarm).
- j. Capability to protect alarm and activity recording on separate partitioning of the disk. The partition shall be configurable in GB and have the ability to overwrite itself.

5. Password:

- a. Support 3 user-defined password settings each allowing specific access levels to the unit functions, menu and hidden cameras.
- b. Support a simple lock all function, which when activated locks all buttons except for Split/Sequence, Zoom and camera buttons.
- c. Support password lock to protect HDD recorded information.

6. Archiving:

- a. Capability to archive to external HDD or DVD.

7. Copy:

- a. Copy images to any device connected to its USB ports. Supported devices are HDD, CD/DVD, USB Jump drives.
- b. Capability to copy, record, and playback at the same time.
- c. Apply a digital signature to all images, sequence of images recorded on the DVR.

- d. PC playback player is copied during copy process.

8. Scheduling:

- a. Provide a user definable schedule to switch to day, night, weekends, and holidays. This schedule shall support 2 user definable patterns.
- b. Capability to allow user definable pattern settings for camera, record rate, record quality, alarm record rate and quality, archiving, skip and motion activation.

9. Alarm Relays:

- a. Provide Alarm and Alarm Plus Normal activity-recording options. Alarm shall record images from those cameras in an alarm activity condition. Alarm Plus Normal shall prioritize the recording of those cameras in an alarm activity condition, while recording images of none alarm cameras.
- b. Provide capability to send a message on alarm or camera failure.
- c. Provide an Emergency Alarm input, forcing alarm recording for all cameras.
- d. Provide an alarm log list for all the alarm activities when recorded as alarm on the hard disk, providing time date, camera and type of event.
- e. Capability to notify up to 5 e-mail addresses or IP addresses of an alarm occurrence. Alarm shall be triggered when the DVR temperature rises to high or a malfunction with the units fan occurs, when an alarm is triggered, when the DVR is re-booted, record mode is activated or when the HD capacity has reached a specified percent.
- f. Provide activity detection per camera input and capability to trigger an alarm when activity or movement (change) occurs in selected area. Each input setting shall be independent from all others.
- g. Provide sixteen alarm trigger input which when activated can trigger an alarm condition.
- h. Provide independent or global alarm recording when an alarm occurs.
- i. The DVR alarm contact (MODE OUT 1-4) shall have individual programmable polarity.
- j. The DVR shall be able to record multiple cameras per alarm trigger.
- k. The DVR shall support monitor A or B display of last camera in alarm with a default of a 2 second dwell per alarmed camera and return to pre-alarm display capability.
- l. The DVR shall support 4 light relay outputs (MODE OUT 1-4) that can trigger telemetry preset. The current rating for the 4 terminals is 500mA at 24VDC.
- m. The DVR shall support a buzzer activated upon alarm
- n. Provide programmable activity detection per channel with a grid that can be set individually supporting up to 5 sensitivity levels and a triggering threshold setting from 1 to 400. Each setting shall support a test mode for testing set settings.
- o. Provide option to sound a buzzer on activity.
- p. Alarm Recording Methods: Motion detection and/or external triggering.

10. Covert Cameras: Support covert cameras via any camera connected.

11. Digital Signature: Apply to recordings and to internal and external hard disk without affecting performance, allowing the authenticity of the digital multiplexed recorded image to be verified.

12. Audio:

- a. DVR shall support 1 channel of audio recording at a minimum frame rate of 0.5 PPS.
- b. DVR shall support playback of audio/video in sync when played back from DVR or PC

13. Telemetry:

- a. Provide control of single and multi-speed telemetry cameras.

- b. Provide PTZ camera support via RS-422/485/232 for support of Pelco D, Sensormatic Manchester, Panasonic, JVC, GE, and Samsung PTZ protocol. Also support of Pelco COAX via channel 1 only.
- c. Support a PTZ camera per input totaling up to 16 cameras per DVR.
- d. Provide local control for each PTZ camera via DVR front panel buttons, optional keyboard and optional with a wired remote.
- e. Provide remote control of PTZ cameras via application software when connected via LAN or WAN.

14. Network Capabilities:

- a. Capability to connect to a 10/100Base-T Ethernet network.
- b. Supports web browser and network (DX-PC55U) application software for LAN or WAN communications.
- c. Audio in live mode will be supported by the network software only.
- d. Include network software with each unit and license free to end user.
- e. Network software shall support duplex operation enabling live and playback at the same time.
- f. Network software shall support saving needed data to host PC. Data shall be camera selectable.
- g. Network software shall support viewing hidden cameras over the network by authorized personnel.
- h. Network software shall provide access to the units event list and its associated video when alarms are recorded as alarms.
- i. Network software shall support storing of digital images to a PC HDD, DVD/CD and USB Flash PEN drive.
- j. Network software shall playback images copied from DVR to DVD/CD or USB Flash PEN drives.
- k. Network software will support up to 5 remote operators to view live or prerecorded images across a network.
- l. Network software shall be fully re-sizeable to full screen viewing.
- m. Network software shall support user selectable picture quality settings.
- n. Network software shall support display of color or monochrome camera video.
- o. Network software shall have an option to set password to prevent unauthorized user viewing of live, recorded images, moving PTZ cameras, controlling the unit, changing the menu system, configuring the network settings and viewing hidden cameras.
- p. Network software shall support Windows WIN2000 and WIN XP.
- q. Network software will support full or partial access to the units various menus and control levels dependent on password protection.
- r. Network software shall support system adjustments over the network.
- s. Network software shall support changes to the DVR menu while displaying live images in the selected display background.
- t. Support multiple DVR connections and display them in one screen.
- u. Support display of live and playback of images on same screen from one or various DVR's.
- v. Support screen size adjustment of display screens.
- w. Support all local search functions via its network connection.
- x. Network software shall support saving of programmed display pattern settings

## 2.03 ACCESSORIES

SELECT FOLLOWING ACCESSORIES BASED ON SYSTEM REQUIREMENTS. DELETE THOSE NOT REQUIRED.
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**A. Security Controller Keyboard:**

1. Joy stick control of PTZ of dome cameras.
2. Jog shuttle dial for fast forward/rewind/playback/frame by frame of images.
3. LCD display for DVR status.
4. Split screen buttons.
5. Monitor A/B selection.
6. Triplex playback control.
7. Up to 256 camera accessibility via cascade connection of DVR.
8. Power cord and AC adaptor.

**B. HDD Extension Unit:**

1. USB 2.0 [500GB] [1TB]

**C. Rack Mount Kit for DVR.**

**D. Rack Mount Kit for HDD Extension Unit.**

**E. Wired Remote Control Unit.**

**PART 3 - EXECUTION**

**3.01 INSTALLATION**

INSERT SECTION NUMBER AND TITLE IN THE FOLLOWING TWO PARAGRAPHS USED TO SPECIFY THE BASIC VIDEO SURVEILLANCE SYSTEM. VERIFY THAT VIDEO SURVEILLANCE SECTION INCLUDES STATEMENTS REQUIRING THE FOLLOWING:

INSPECTION OF ALL EQUIPMENT FOR COSMETIC DEFECTS AND DAMAGE PRIOR TO INSTALLATION.

INSPECTION OF DVR INSTALLATION FOR PROPER AND STABLE AC VOLTAGE, GOOD VENTILATION, AND CLEAN ENVIRONMENT.

DVR SHALL PASS ALL POWER-UP SELF TEST, SHALL RECOGNIZE AND DISPLAY ALL CAMERAS CONNECTED TO IT'S INPUTS, AND DEMONSTRATE THAT IT BE PROGRAMMED TO SUPPORT ITS VARIOUS FUNCTIONS. BE ABLE TO RECORD TO ITS INTERNAL AND EXTERNAL MEDIA, BE ABLE TO PLAYBACK RECORDED VIDEO AND SUPPORT AND CORRECTLY PERFORM ACTIVATED FEATURES AND FUNCTIONS.

A. Refer to Section \_\_\_\_ for DVR installation with other components of the video surveillance system. Install and setup in accordance with DVR Owner's Manual.

**3.02 FIELD QUALITY CONTROL**

A. Site Tests: Refer to Section \_\_\_\_ for site testing of the video surveillance system.

END OF SECTION<sup>1</sup>

<sup>1</sup> This specification was prepared specifically for Mitsubishi Digital Electronics America, Inc. by ASC Specification Consultants. Comments or suggestions for improvement should be addressed to: Mitsubishi Digital Electronics America, Inc. at the address noted in Article 2.01.

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